



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,130	08/01/2003	Paul E. Fischione	129/015	3089

7590 01/27/2011  
Philip E. Levy, Esq.  
Barry I. Friedman, Esq.  
Metz Lewis LLC  
11 Stanwix Street, 18th Floor  
Pittsburgh, PA 15222

EXAMINER
----------

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
----------	--------------

1724

MAIL DATE	DELIVERY MODE
-----------	---------------

01/27/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/633,130

Applicant(s)

FISCHIONE ET AL.

Examiner

Rodney G. McDonald

Art Unit

1724

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,16-21,24-31,58-65,68,69,73-75,118,120,121 and 124-164 is/are pending in the application.
- 4a) Of the above claim(s) 152-157 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,16-21,24-31,58-65,68,69,73-75,118,120,121,124-135,137-151 and 158-164 is/are rejected.
- 7) ☒ Claim(s) 136 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***REOPENING PROSECUTION***

The 35 U.S.C. 103 rejections utilizing Baldwin have been withdrawn. Newly discovered reference(s) to Libby et al. (U.S. Pat. 6,039,000) and Novak et al. (U.S. Pat. 6,278,203) have been applied in new 35 U.S.C. 103 rejections. Rejections based on the newly cited reference(s) follow.

***Election/Restrictions***

This application contains claims 152-157 drawn to an invention nonelected. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert (U.S. Pat. 4,858,556) in view of Moslehi (U.S. Pat. 6,051,113), Mahler (U.S. Pat. 4,595,483) and Miyoshi (U.S. Pat. 6,325,857).

Regarding claim 1, Siebert teach an apparatus including means for removal of material from the specimen. (Column 12 lines 59-64; Column 12 line 28) Means for coating the specimen. (Column 12 lines 52-56) Also any of a number of different types of sources can be provided in the apparatus. (Column 12 lines 24-25) The processes can be carried out in a single process chamber 10 (Figs. 6 and 7) under continuous vacuum conditions. (Column 9 lines 49-58)

Regarding claim 3, the means for removing comprises a means for etching using an ion beam. (Column 12 line 28; Column 12 lines 59-64)

Regarding claims 4, Siebert teach that the means for etching comprises an ion beam source for directing an ion beam at the specimen. (Column 22 lines 19-22)

Regarding claims 5, a source of process gas is inherently positioned adjacent the ion source in order to produce the ion beam. (Column 22 lines 18-22)

Regarding claim 6, Siebert teach utilizing a magnetron sputtering device. (Column 12 line 26)

Regarding claim 7, Siebert teach as the source an ion source for directing an ion beam at a target can be used. (Column 12 lines 64-68; Column 13 lines 1-3)

Regarding claim 21, Siebert teach a vacuum pump connected to the process chamber to evacuate the chamber to a selected vacuum level. (Column 9 lines 58-62)

Regarding claim 68, Siebert suggest ion etching under continuous vacuum conditions. (Column 22 lines 9-22)

Regarding claim 69, Siebert teach an ion beam for etching. (Column 22 lines 9-22)

Regarding claim 73, Siebert teach utilizing a shutter to selectively expose the specimen to ion beam etching. (Column 11 lines 31-43)

Regarding claim 74, Siebert teach a specimen stage for moving the specimen inside and outside of the ion beam. (Column 10 lines 56-60)

Regarding claim 124, Siebert teach controlling the powers to sources. (Column 13 lines 39-68)

Regarding claim 129, Siebert teach ion beam sputtering coating utilizing a target an ion beam. (Column 13 lines 1-3)

Regarding claim 139, Siebert teach a sample stage being movable to a plurality of processing positions in the vacuum chamber under continuous vacuum conditions for performing processes. (Figs. 6, 7 item 16)

Regarding claims 140, 141, Siebert teach automatic control for the moving the substrate. (Column 13 lines 39-68; Column 14 lines 1-68; Column 15 lines 1-68)

Regarding claims 142, 143, Siebert teach adjusting the source to substrate distance vertically. (Column 10 lines 52-56; Column 6 lines 18-22)

Regarding claim 149, Siebert teach at least three degrees of movement. (i.e. source to substrate distance, rotational movement and orbital motion) (Column 10 lines 52-56; Column 14 lines 1-2)

Regarding claim 151, Siebert teach utilizing shutters. (Column 11 lines 31-43)

The differences between Siebert and the present claims is that the plasma generator for plasma cleaning the specimen is not discussed (Claim 1), coating the specimen with conductive material is not discussed (Claim 1), means for plasma etching is not discussed (Claim 1), utilizing an oil free vacuum pump is not discussed (Claim 24), utilizing a particular kind of pump is not discussed (Claim 25), the plasma etching being capacitive discharge plasma etching is not discussed (Claim 58), the means for plasma etching comprising a first electrode supported by said process chamber and a second electrode supported by said process chamber, said first and second electrodes defining a gap therebetween for receiving said specimen is not discussed (Claim 59), the first and second electrodes each comprising a substantially planar electrode, said first electrode and said second electrode being substantially parallel to one another is not discussed (Claim 60), the specimen stage for holding said specimen, said specimen stage being supported by said process chamber, at least a portion of said specimen stage being said first electrode is not discussed (Claim 61), the specimen stage being moveable in a direction substantially perpendicular to a planar surface of said first electrode is not discussed (Claim 62), the second electrode being moveable in

a direction substantially perpendicular to a planar surface of said second electrode is not discussed (Claim 63), the alternating voltage source connected to said first and second electrodes for generating an electric field within said gap, said electric field generating a plasma from a gas introduced into said gap is not discussed (Claim 64) and means for selective spatial isolation of the other means when the plasma etching means is in operation is not discussed (Claim 1).

Regarding the plasma generator for plasma cleaning the specimen (Claim 1), Siebert discussed above already teach that any source may be provided in the apparatus including multiple sources. (See Siebert Column 12 lines 24-25) Moslehi teach an apparatus including a plasma generator for plasma cleaning the specimen. (Column 10 lines 27-28) The plasma cleaning and the coating of the specimen can be performed in a single process chamber under continuous vacuum conditions. (Fig. 2; Column 8 lines 53-54)

Regarding coating the specimen with conductive material (Claim 1), Moslehi teach an apparatus including a plasma generator for plasma cleaning the specimen. (Column 10 lines 27-28) The apparatus can include means for coating a specimen with conductive material. (Column 10 lines 25-27) The plasma cleaning and the coating of the specimen can be performed in a single process chamber under continuous vacuum conditions. (Fig. 2; Column 8 lines 53-54)

Regarding claim 24, Moslehi teach utilizing an oil-free vacuum pump. (Column 8 lines 54-57)

Regarding claims 25, Moslehi teach utilizing a cryosorption vacuum pump.  
(Column 8 lines 54-57)

The motivation for utilizing the features of Moslehi is that it allows for performing operations in a single chamber. (Column 8 lines 53-54)

Regarding the means for plasma etching (Claim 1), Siebert discussed above already teach that any source may be provided in the apparatus including multiple sources. (See Siebert Column 12 lines 24-25) Mahler teach an apparatus including means for coating a specimen with a material from a sputtering coating source and means for plasma etching the specimen. (Column 4 lines 1-10) The coating of the specimen and the plasma etching of the specimen occurs in a single vacuum chamber 4 evacuated by pump 29. (Column 4 lines 1-10; Column 5 lines 11-13)

Regarding claim 58, 121, Mahler teach the plasma etching is capacitive discharge plasma etching. (Column 2 lines 61-68; Column 3 lines 1-3)

Regarding claim 59, the substrate holder and the charging cover represent the first and second electrodes with the specimen in between. (Column 2 lines 61-68; Column 3 lines 1-3)

Regarding claim 60, Mahler teach the first and second electrodes are substantially planar and are parallel to one another. (Column 2 lines 61-68; Column 3 lines 1-3)

Regarding claim 61, Mahler teach a specimen stage 26 for holding the substrate and being part of the first electrode is present. (Column 4 lines 53-56)



Regarding claim 63, Mahler teach the second electrode cover can move the in a direction perpendicular by a lift device. (Column 4 lines 7-10)

Regarding claim 64, 121, Mahler teach utilizing an alternating voltage source for generating the plasma. (Column 2 lines 63)

The motivation for utilizing the features of Mahler is that it allows for performing processes in a single chamber. (Column 4 lines 1-10; Column 5 lines 11-13)

Regarding isolating the etching means form the other means (claim 1), Miyoshi teach a shutter which isolates means from an etching means. (Column 9 lines 62-68; Column 10 lines 1-4)

The motivation for utilizing the features of Miyoshi is that it allows for protecting the other means in the chamber to be effected by the etching. (Column 10 lines 16-17)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Siebert by utilizing the features of Moslehi, Mahler and Miyoshi because it allows for performing process in a single chamber and protecting the other means from the etching device.

Claims 16, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Ameen et al. (U.S. Pat. 6,143,128).

The differences not yet discussed are that the plasma generator is not discussed. (Claim 16) and the use of an inductively coupled plasma is not discussed (claim 65).

Regarding claim 16, Ameen et al. teach that for cleaning a RF coil for a chamber can be utilized. (Column 9 lines 48-68; Column 10 lines 1-7)

Regarding claims 65, Ameen et al. teach that for cleaning a RF coil for a chamber can be utilized. (Column 9 lines 48-68; Column 10 lines 1-7)

The motivation for utilizing an RF coil for cleaning is that it allows for cleaning the substrate. (Column 9 lines 48-68; Column 10 lines 1-7)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a plasma generator as taught by Ameen et al. because it allows for cleaning of the substrate.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi in view of Ameen et al. as applied to claim 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Chang et al. (U.S. Pat. 6,434,814).

The differences not yet discussed is the gases used for cleaning and multiple gas inlets and magnetron sputtering

Regarding claims 17, 18, 19, 20, Chang et al. teach that Ar and oxygen can be utilized for clean etching. Utilizing two gases would require two inlets for the gases. (Column 8 lines 57-65)

Chang et al. suggests magnetron coating for sputtering. (Column 6 lines 57-62)

The motivation for utilizing Ar and oxygen is that it allows for cleaning. (Column 8 lines 57-65)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized oxygen and argon as taught by Chang et al. because it allows cleaning of the substrate.

Claims 26-29, 75, 147, 148, 150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Mitro et al. (U.S. Pat. 5,922,179).

The differences not yet discussed are the rotating and tilting of the substrate (Claims 26, 28, 29, 75), the cooling of the substrate (Claim 27), moving the substrate in a first angular direction (Claim 147), moving the substrate in a second angular direction (Claim 148) and four degrees of movement is not discussed (Claim 150).

Regarding claims 26, 29, 75, Mitro et al. teach a specimen holder that rotates and rocks. (Column 4 lines 20-27)

Regarding claim 27, Mitro et al. teach a specimen holder that is cooled. (Column 3 lines 15-22)

Regarding claim 147, Siebert discussed above teaching moving the stage in a vertical direction to control distance between the target and the substrate. The substrate can be rotated. (See Siebert discussed above) Mitro et al. teach rocking the substrate holder which means the substrate holder is moved in first and second angular directions. (Mitro et al. Column 4 lines 20-27)

Regarding claim 150, Siebert discussed above already teach three degrees of movement. (See Siebert discussed above) Mitro et al. teach a fourth degree of movement (i.e. rocking). (See Mitro et al. discussed above)

The motivation for cooling, rotating and tilting the substrate is that it allows for uniform coating and etching of the film. (Column 4 lines 20-33)

Regarding claims 28, 29, 75, Moslehi suggest the stage being movable up and down along an axis. (See Moslehi Fig. 2)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have cooled, rotated and tilted the substrate holder as taught by Mitro et al. because it allows for uniform coating and etching of the film.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Kobayashi et al. (U.S. Pat. 5,340,460).

The difference not yet discussed is the use of a cold trap.

Kobayashi et al. teach a cold trap in the chamber. (Column 4 lines 32-39; Fig. 3)

The motivation for providing a cold trap in the chamber is that it allows for capturing residual gases. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a cold trap as taught by Kobayashi et al. because it traps residual gases.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Holland (U.S. Pat. 4,311,725).

The difference not yet discussed is the crystal oscillator.

Holland teach a crystal oscillator for measuring the amount of total material deposited and ending deposition. (Column 8 lines 11-40)

The motivation for utilizing a crystal oscillator is that it allows for measuring the amount of film deposited. (Column 8 lines 11-40)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a crystal oscillator as taught by Holland because it allows for measuring the thickness.

Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Nomura et al. (U.S. Pat. 6,641,703).

The difference not yet discussed is the use of a load lock. (Claim 118)

Regarding claim 118, Nomura et al. teach the load/unload chamber. (Column 6 lines 22-25)

The motivation for utilizing load lock chamber is for loading of the substrate. (Column 6 lines 22-25)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilizing a load lock as taught by Nomura et al. because it allows for loading the substrate.

Claims 120 and 125-128 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Chang et al. (U.S. Pat. 6,434,814).

The differences not yet discussed are the reactive gas (Claim 120), the two gas inlets (claims 125, 127) and the process gas being oxygen (Claims 126, 128).

Regarding claims 120, 125, 126, 127, 128, Chang et al. teach that Ar and oxygen can be utilized for clean etching. Utilizing two gases would require two inlets for the gases. (Column 8 lines 57-65)

The motivation for utilizing the features of Chang et al. is that it allows for cleaning. (See Chang et al. discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Chang et al. because it allows for cleaning.

Claims 130-135 and 137 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Hurwitt (U.S. Pat. 3,756,939).

The difference not yet discussed is a lever supported by said vacuum chamber, said lever holding said target, said lever being selectively moveable into a position in which said ion beam is directed at said target is not discussed (Claim 130), the means for coating comprising a plurality of targets, each of said targets being formed of a conductive material, said ion source directing said ion beam at a selected one of said targets is not discussed (Claim 131), the means for moving said selected one of said targets from a covered position to an exposed position is not discussed (Claim 132), the lever supported by said vacuum chamber, said lever holding said plurality of targets, said lever being selectively moveable into a position in which said ion beam is directed at said selected one of said targets is not discussed (Claim 133) the plurality of targets being held by a target holder, said target holder being moveable among a plurality of positions, each of said positions exposing one of said targets and covering a remaining one or more of said targets is not discussed (Claim 134), the target holder being rotatably supported by said lever, said target holder being rotatable among said plurality of positions is not discussed (Claim 135), the means for selectively exposing said selected one of said targets and covering a remaining one or more of said targets is not discussed (Claim 137).

Regarding claims 130-135, 137, Hurwitt teach a lever holding a target and selectively movable into a position in which a target is exposed to be sputtered. Targets can be covered while one is exposed to be sputtered. (Column 4 lines 3-39)

The motivation for utilizing Hurwitt is that it allows for sputtering from a number of targets in sequence. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Hurwitt because it allows for sputtering from a number of targets in sequence.

Claims 144-146 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siebert in view of Moslehi, Mahler and Miyoshi as applied to claims 1, 3-7, 21, 24, 25, 58-64, 68, 69, 73, 74, 121, 124, 129, 139, 140, 141, 142, 143, 149 and 151 above, and further in view of Libby et al. (U.S. Pat. 6,039,000) and Novak (U.S. Pat. 6,278,203).

The differences not yet discussed is utilizing a beam sensor to sense the position of the substrate (Claim 144), detecting the first position relative to a second position along the vertical axis (Claim 145), and where the beam is a laser (Claim 146).

Regarding claims 144-146, Siebert teach adjusting the source to substrate distance vertically. (Column 10 lines 52-56; Column 6 lines 18-22) Siebert teach a motion mechanism is utilized for positioning the substrates. (Column 6 lines 18-22) Libby et al. teach detecting a first position of a surface of a specimen within the processing chamber by utilizing a laser beam. (Column 1 lines 8-29; Column 3 lines 26-44) Novak et al. teach using a sensor when utilizing laser interferometry to detect position of a workpiece. (Column 4 lines 63-67; Column 5 lines 1-5)

The motivation for utilizing the features of Libby et al. is that it allows for determining the position of the workpiece. (Column 1 lines 27-29)

The motivation for utilizing the features of Novak et al. is that it allows for determining the position of the workpiece. (Column 4 lines 63-67; Column 5 lines 1-5)



Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Libby et al. and Novak et al. because it allows for determining the position of the substrate.

Claims 158-160 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moslehi (U.S. Pat. 6,051,113) in view of Mitro et al. (U.S. Pat. 5,922,179), Libby et al. (U.S. Pat. 6,039,000) and Novak (U.S. Pat. 6,278,203).

Regarding claim 158, Moslehi teach a processing chamber including a sample stage being moveable to one or more positions in the processing chamber. Moslehi teach a position sensor for detecting a position of the specimen. The sample stage can be moved automatically to one or more processing positions remote from the first position in any of the three dimensions. (Fig. 2; Column 10 lines 25-28; Column 8 lines 53-54; Column 4 lines 17-44)

Regarding claim 159, the first position is measured relative to a second position along an axis. (Column 4 lines 17-44)

Regarding claim 160, the processing position can be one of coating or cleaning. (Column 10 lines 25-28)

The difference between Moslehi and the present claims is that holding the substrate at an angle relative to a beam impinging thereon.

Mitro discussed above teach rocking the substrate and thus disposing the substrate at an angle. (See Mitro discussed above)

The motivation for utilizing the features of Mitro is that it allows for uniform coating and etching of the film. (Mitro Column 4 lines 20-33)

Libby et al. teach detecting a first position of a surface of a specimen within the processing chamber by utilizing a laser beam. (Column 1 lines 8-29; Column 3 lines 26-44) Novak et al. teach using a sensor when utilizing laser interferometry to detect position of a workpiece. (Column 4 lines 63-67; Column 5 lines 1-5)

The motivation for utilizing the features of Libby et al. is that it allows for determining the position of the workpiece. (Column 1 lines 27-29)

The motivation for utilizing the features of Novak et al. is that it allows for determining the position of the workpiece. (Column 4 lines 63-67; Column 5 lines 1-5)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Moslehi by utilizing the features of Mitro, Libby et al. and Novak et al. because it allows for uniform coating and etching of the film and for determining the position of the substrate.

Claims 161, 162, 163, 164 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moslehi (U.S. Pat. 6,051,113) in view of Libby et al. (U.S. Pat. 6,039,000), Novak et al. (U.S. Pat. 6,278,203) and Mitro et al. (U.S. Pat. 5,922,179).

Regarding claim 161, Moslehi teach a processing chamber including a sample stage being moveable to one or more positions in the processing chamber. Moslehi teach a position sensor for detecting a position of the specimen. The sample stage can be moved automatically to one or more processing positions remote from the first position in any of the three dimensions. (Fig. 2; Column 10 lines 25-28; Column 8 lines 53-54; Column 4 lines 17-44)

Regarding claim 162, the first position is measured relative to a second position along an axis. (Column 4 lines 17-44)

Regarding claim 163, the processing position can be one of coating or cleaning. (Column 10 lines 25-28)

The differences between Moslehi and the present claims is that the use of a beam such as a laser is not discussed (claims 161, 164) and holding the substrate at an angle (Claim 161).

Regarding claims 161, 164, Libby et al. teach detecting a first position of a surface of a specimen within the processing chamber by utilizing a laser beam. (Column 1 lines 8-29; Column 3 lines 26-44) Novak et al. teach using a sensor when utilizing laser interferometry to detect position of a workpiece. (Column 4 lines 63-67; Column 5 lines 1-5)

The motivation for utilizing the features of Libby et al. is that it allows for determining the position of the workpiece. (Column 1 lines 27-29)

The motivation for utilizing the features of Novak et al. is that it allows for determining the position of the workpiece. (Column 4 lines 63-67; Column 5 lines 1-5)

Regarding claim 161, Mitro teach holding the substrate at an angle. (See Mitro et al. discussed above)

The motivation for utilizing the feature of Mitro is that it allows for uniform coating and etching of the film. (Column 4 lines 20-33)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Moslehi by utilizing a position sensor and

laser as taught by Libby et al. and Novak et al. because it allows for determining the position of the substrate and to have held the substrate at an angle as taught by Mitro because it allows for uniform etching and coating of the film.

***Allowable Subject Matter***

Claim 136 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 136 is indicated as being allowable because the prior art of record does not teach the target holder including a plurality of pins, the vacuum chamber supporting an arm, the target holder being selectively rotated by contact between the arm and any one of the pins.

***Response to Arguments***

Applicant's arguments filed November 12, 2010 have been fully considered.

At the outset it should be noted that in the Appeal Brief submitted November 12, 2010 under the Grounds of Rejection to be Reviewed on Appeal there should be a grounds of rejection listed for the rejection of claims 158, 161 as the arguments for these claims are different than the arguments for the other claims (for example claim 1 arguments).

**Response to arguments of the 35 U.S.C. 112 1<sup>st</sup> paragraph rejection:**

In response to the argument that the specification provides sufficient description of the portion of the claimed apparatus responsible for isolating the means for etching from the other devices, it is agreed that Applicant's specification provides support for this limitation. Applicant's arguments filed November 12, 2010 highlight locations in the specification where the limitation can be found.

**Response to the arguments of the 35 U.S.C. 103 rejections:**

***Claims 1, 3-7, 16-21, 24-31, 58-65, 68, 69, 73-75, 118, 121, 124-137 and 139-151:***

In response to the argument that Siebert does not teach a shutter to spatially separate the specimen and plasma etching mechanism from the other operative components, it is argued that Siebert et al. do teach utilizing a shutter to expose the specimen to appropriate hardware. Miyoshi teach utilizing a shutter to close off the means from one another so that the different process do not affect the functionalities of the other components. The shutter spatially separates the devices from one another. One of ordinary skill in the art would readily envisage incorporating shutter means to isolate each of the devices of Siebert et al. because Miyoshi suggest that it is necessary to prevent the devices from affecting one another. (See Miyoshi and Siebert discussed above)

In response to the argument that Miyoshi does not teach shielding the specimen or other fixtures in the chamber, it is argued that Miyoshi teach utilizing a shutter to close off the means from one another so that the different process do not effect the

functionalities of the other components. The shutter spatially separates the devices from one another. One of ordinary skill in the art would readily envisage incorporating shutter means to isolate each of the devices of Siebert et al. because Miyoshi suggest that it is necessary to prevent the devices from affecting one another. (See Miyoshi and Siebert discussed above)

In response to the argument that none of the references recognize the need to isolate the plasma etching function during operational etching of the specimen nor recognize any need for separation of the functions, it is argued that Miyoshi teach isolating the separate functions from each other because Miyoshi recognize that the different functions need to be protected from one another. (Miyoshi Column 10 lines 15-17)

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

***Claims 158, 161***

In response to the argument that Moslehi, Mitro nor Baldwin does not teach a beam for detecting position, it is argued that newly cited references to Libby et al. and Novak et al. teach a laser beam to detect position of a substrate.

This action will be made NON-FINAL based on the newly cited reference.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/633,130  
Art Unit: 1724

Page 23

/Rodney G. McDonald/  
Primary Examiner, Art Unit 1724

Rodney G. McDonald  
Primary Examiner  
Art Unit 1724

RM  
January 26, 2010